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ESTIMATED CONTRIBUTION OF CODED WIRE TAGGED RELEASES OF CHINOOK SALMON (Oncorhynchus tshawytscha) TO THE COMMERCIAL FISHERIES OF SOUTHEASTERN ALASKA IN 1982

By:
John E. Clark
Benjamin W. Van Alen
and
Robert P. Marshall

December 1985

ALASKA DEPARTMENT OF FISH AND GAME
P.O. Box 3-2000, Juneau, Alaska 99802

Don W. Collinsworth
Commissioner

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Alaska Department of Fish and Game
Division of Commercial Fisheries
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Estimated contributions in this report represent only contributions from coded wire tag (CWT) releases as reported in the Pacific Marine Fisheries Commission (PMFC) CWT release documents. In particular, no attempt has been made to estimate contributions from untagged hatchery releases or from tagged or untagged wild stocks. Therefore, contributions designated by facility, agency, or jurisdiction in this report represent only aggregations of coded wire tag release groups. Neither has an attempt been made to adjust contribution estimates for unsampled strata.

ABSTRACT

Contribution of coded wire tagged chinook salmon *(Oncorhynchus tshawytscha)* wild stocks, hatchery, and experimental release groups to the Southeastern Alaska troll, gillnet, and purse seine commercial fisheries for calendar year 1982 is estimated. Approximately 95% of the commercial catch strata were sampled. The largest stratum not sampled was the 1 October to 31 December 1982 troll fishery. Overall, 24%, 30%, and 44% of the gillnet, purse seine, and troll catches, respectively, were sampled. A total of 2,806 coded wire tags was decoded, representing 389 different tag codes. Releases from Alaska, British Columbia, Washington, Idaho, and Oregon were recovered in the catch. Alaska hatchery and experimentally reared chinook salmon contributed an estimated 1,163 fish to the total catch, or 0.4% of the 299,390 commercial chinook salmon harvest. British Columbia releases contributed an estimated 37,145 (12.4%), Washington tagged releases totaled approximately 3,923 (1.3%), Oregon tagged releases contributed an estimated 5,207 (1.7%), and Idaho releases totaled 70 (<0.1%) chinook salmon. Estimated contributions by region and hatchery did not include either the catch of untagged releases or natural stocks, or of unsampled strata. In addition to hatchery and experimental production, an estimated 758 tags, representing 69 tag codes, of wild stocks were present in the commercial catches. The standard error associated with the contribution of each tagged release of fish and with the total contribution of each hatchery and region was estimated using a multivariate hypergeometric model.

KEY WORDS: coded wire tags, chinook salmon, S.E. Alaska, hatchery contributions, variance estimates.

INTRODUCTION

Coded wire tags (CWT) are used by Northwest coast researchers and managers to identify stocks of salmon of both wild and hatchery production. Coded wire tagging and recovery programs serve to evaluate the quality and effectiveness of salmon rearing facilities and to differentiate between natural and hatchery produced salmon in mixed stock fisheries. Coded wire tag recovery data also provides information on the migratory timing and direction of travel, survival, rates of growth, age of maturity, and other biological parameters of tagged stocks.

The chinook salmon *(Oncorhynchus tshawytscha)* CWT recovery program was implemented in Southeastern Alaska in 1973. During the 1970's, the Southeastern chinook salmon harvest averaged 320,000 fish, over 90% of which were caught by the hand and power troll fishery. Wild and hatchery stocks of chinook salmon originating from Alaska, British Columbia, Washington, Idaho, Oregon, and California are harvested in Southeastern Alaska. Data from the 1975, 1976, and 1978 troll fishery CWT recovery program were published by Davis (1976), Davis and Selin (1977), and Davis et al. (1979). Funk (1981) presents a detailed analysis of the 1979 CWT recoveries.

In 1982, 299,390 chinook salmon were harvested by commercial fisheries in Southeastern Alaska. Age composition, average lengths, and catch statistics by fishery, statistical week, and district have been assembled by the Alaska Department of Fish and Game (ADF&G) for all Southeastern Alaska (excluding the Yakutat gillnet fishery) by Van Alen (1983) and for the Yakutat gillnet fishery by McBride and Brogle (1983). Age composition analysis yielded a minimum estimate of 153,568 (51%) chinook salmon of non-Alaskan origin harvested in the commercial fisheries (Van Alen 1983). Scale pattern analysis also confirmed that large numbers of non-Alaskan wild and hatchery stocks were taken by Southeastern Alaska fishermen (Van Alen 1985).

In Southeastern Alaska, chinook salmon catches have declined to approximately half of the catches of the 1930's. Recently, guideline harvest levels have been set in an attempt to rebuild natural stocks. Increasing hatchery production supplements in the catch of natural stocks. However significant contributions to the chinook salmon harvest by non-Alaskan wild and hatchery stocks and the difficulties of accurately allocating catches to area of origin has made management of these highly mixed stock fisheries difficult. Scale pattern analysis has proven to be an effective method for estimating the proportion of chinook salmon of Alaskan and non-Alaskan origin in the commercial harvests (Van Alen 1984). Coded wire tag data may soon prove to be of great value in both the inseason and post-season estimation of the contribution of hatchery production and non-Alaskan stocks in the Southeastern Alaska fisheries.

This report, the first in a series, present the CWT recovery data for Southeastern Alaska in a format which is readily accessible to researchers and managers. The number of tags and estimated total number of chinook salmon contributed to the Southeastern Alaska commercial catch is presented for each tag code recovered by fishery, area, and time strata sampled, along with the

standard errors of each estimate. There was no attempt to expand contributions over unsampled strata. The total contribution and associated standard errors of Washington, Oregon, British Columbia, and Alaska releases of chinook salmon to the 1982 Southeastern Alaska fisheries is finally estimated for each gear type, area, and time strata. The reader is cautioned that estimated contributions in this report represent only contributions from CWT releases as reported in the Pacific Marine Fisheries Commission (PMFC) CWT release documents. In particular, no attempt has been made to estimate contributions from untagged hatchery releases or from tagged or untagged wild stocks. Therefore, contributions designated by facility, agency, or jurisdiction in this report represent only aggregations of CWT release groups.

STUDY AREA AND CONDUCT OF THE FISHERIES

Southeastern Alaska (Region 1) includes both Federal and Alaskan waters between Cape Suckling on the north and Dixon Entrance on the South (Figure 1). The region is divided into 25 statistical districts composed of inside Districts 101 to 115; Yakutat area Districts 182, 183, and 186; offshore Districts 150, 152, 154, 157, 181, and 189; and Cape Fairweather to Cape Spencer District 116. Purse seine and gillnet harvests occur in discrete areas, allowing the catch and sample data to be attributed to specific districts. Troll catch and sample data are sometimes not attributable to a single statistical district and must be assigned to larger areas which are composed of several districts. Troll fishery catch and sample data are also reported by PMFC (or 9-area) grouping and by quadrant (or 4-area) grouping. The statistical districts in each PMFC area and quadrant are listed in Table 1.

Four types of gear are employed to commercially harvest chinook salmon in Southeastern Alaska: fish trap, gillnet, purse seine, and troll gear. Fish traps are restricted to the Annette Island Fishery Reserve and harvest relatively few chinook salmon (1970 to 1982 annual average of 180 fish). The gillnet fishery occurs in Statistical Districts 101, 106, 108, 111, 115, 182, and 183. Purse seine harvest is allowed in Districts 101 to 107, 109, 110, and 112 to 114. Catches of chinook salmon by the gillnet and purse seine fleet are generally incidental to directed sockeye *(O. nerka)*, chum *(O. keta)*, pink *(O. gorbuscha)*, or coho *(O. kisutch)* salmon fisheries. Annual purse seine catches have averaged 9,460 chinook salmon from 1970 to 1982, while gillnet catches have averaged 14,882 chinook salmon during the same time period.

Commercial troll catch occurs, with some restrictions, in all districts and chinook and coho salmon are primarily the target species. A minimum size limit of 71 mm (28 in) is in effect for all troll caught chinook salmon. The number of troll caught chinook salmon has averaged 293,069 fish from 1970 to 1982, accounting for 91% of the total chinook salmon harvest in Southeastern Alaska. In 1982, the troll fishery was composed of an estimated 840 power troll gear units and 970 hand troll gear units. Hand trollers accounted for 15% of the chinook salmon catch in 1982.

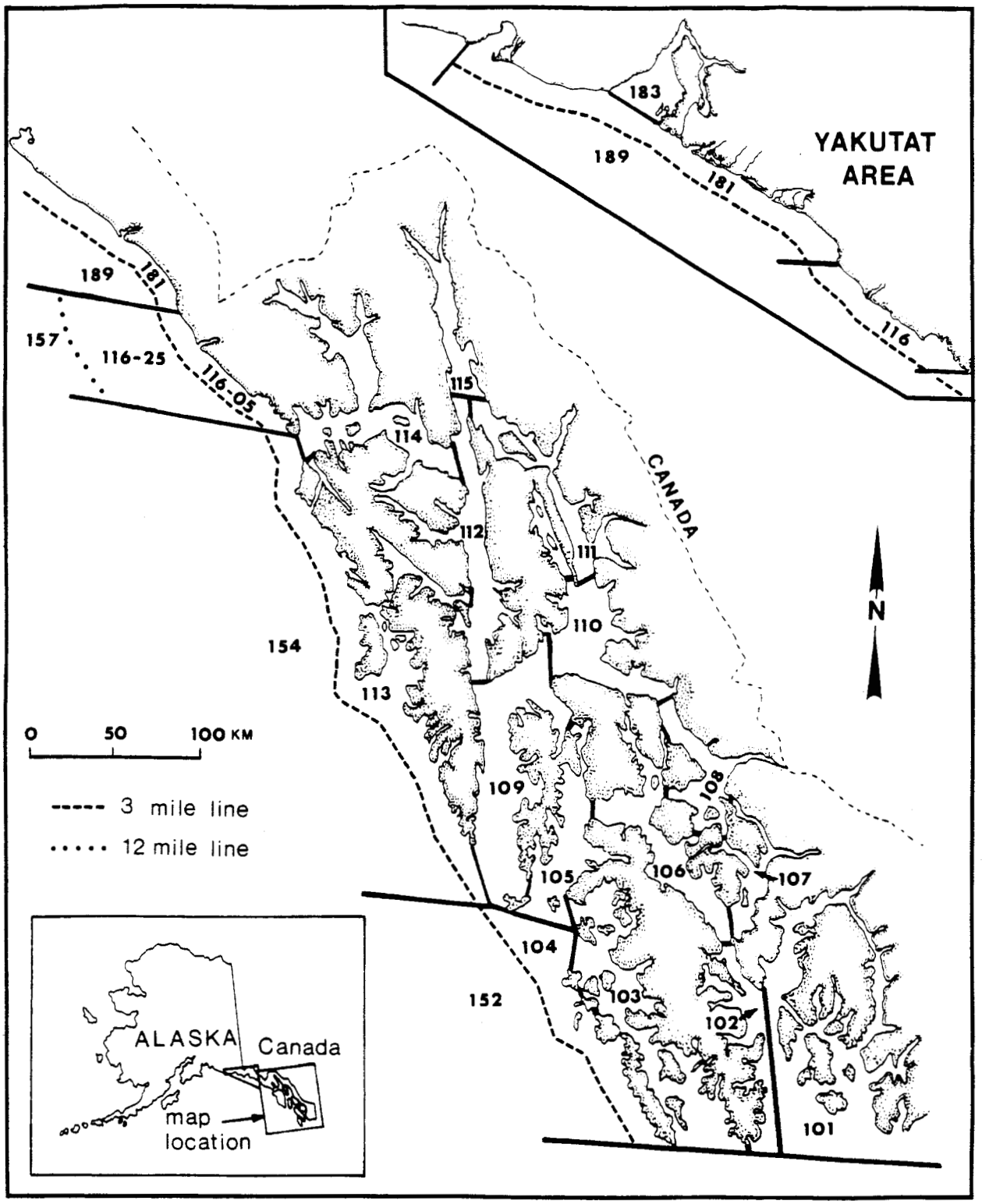

Figure 1. Statistical districts in Southeastern Alaska.

Table 1. Statistical areas belonging to each Pacific Marine Fisheries Commission area and to each quadrant of Southeastern Alaska.

PMFC Area	Abreviation	Statistical Areas (Districts)
Northern Outside	NOUT	116, 157, 181, 183, 186, 189
Central Outside	COUT	113, 154
Southern Outside	SOUT	103, 104, 152
Southern Inside	SIN	101, 102, 150
Southern Intermed	SNTR	105, 109, 110
Central Inside	CIN	106, 107, 108
Stephens Passage	STEP	111
Central Intermed	CNTR	112, 114
Lynn Canal	LYNN	115

Quadrant Area	Name (Tag Lab)	Statistical Area (District)
Northern Outside	Northwest	113, 114, 116, 154, 157, 181, 183, 186, 189
Northern Inside	Northeast	109, 110, 111, 112, 115
Southern Outside	Southwest	103, 104, 150, 152
Southern Inside	Southeast	101, 102, 105, 106, 107, 108

A guideline harvest level of 255,500 fish was adopted by the Alaska Board of Fisheries for the 1982 season (ADF&G 1982). Troll harvest of chinook salmon was regulated principally by time and area closures. In the 1982 'accounting year', the winter fishery extended from 1 October 1981 to 14 April 1982. Fishing was restricted to those areas lying east of the surfline. Following a month long closure the summer fishery began on 15 May. A 10-day closure from 7 June through 16 June was implemented to help increase coastwide spawning escapements. The fishery reopened on 17 June and continued until 28 July, the projected date that the chinook salmon quota would be achieved. Troll harvest of all species of salmon except chinook was allowed from 8 August to 20 September. Fishermen were required to return to the water all chinook salmon caught incidentally during this period. The 1983 winter fishery began on 1 October and continued through the end of the year.

Catch and sample data were analyzed by statistical week for the net fisheries and by either statistical week or grouped statistical weeks for the troll fishery[1]. Purse seine and gillnet harvests were regulated by discrete openings, allowing catch and sample data to be assigned to distinct statistical weeks. Troll deliveries may have included catch from multiple statistical weeks which was arbitrarily assigned to a single statistical week. Therefore, some errors exist in the commercial catch, sample size, and tag recovery data which cannot be resolved. Due to small catches during the winter fishery from 1 January to 14 April 1982, all data were grouped into one time stratum.

METHODS

Catch Sampling

Samplers were stationed at the Southeastern ports of Craig, Ketchikan, Port Alexander, Petersburg, Sitka, Juneau, Metlakatla, Excursion Inlet, and Pelican. Sampling was also conducted in Elfin Cove, Hoonah, Wrangell, Angoon, Gedney Harbor, Security Cove, Point Baker, and Yakutat during times of peak deliveries. Sampling was conducted on fish landed by tenders of both the net and troll fisheries and from landings of individual boats. Random sampling of at least 20% of the fish harvested by gear type, district, and week was intended. The following statistics were recorded for each commercial boat or tender sampled: port of landings, processor, date sold and landed, boat identification, fishing gear, statistical area or areas of harvest, type of sample type (random or select), number of fish sampled (by species) for a missing adipose fin, number of adipose clipped fish counted and marked, the appearance of each adipose clip (good or questionable), and the snout to fork length of each fish lacking an adipose fin. When a salmon without an adipose fin was found, the head was marked with a numbered plastic strap tag. Samplers subsequently attempted to retrieve all marked heads after the fish were processed, however, some heads were lost between placement of the head strap and shipment to the head lab.

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[1] A statistical week is a 7-day period beginning at 12:01 AM Sunday and running through 12:00 midnight the following Saturday. Each week of the year is sequentially numbered. A list of the weeks and corresponding calendar dates for 1982 are listed in Table 2.

Table 2. Statistical weeks and corresponding calendar dates in 1982.

Stat Week	First day of Week	Last day of Week	Stat Week	First day of Week	Last day of Week
1	Jan 1	Jan 2	28	Jul 4	Jul 10
2	Jan 3	Jan 9	29	Jul 11	Jul 17
3	Jan 10	Jan 16	30	Jul 18	Jul 24
4	Jan 17	Jan 23	31	Jul 25	Jul 31
5	Jan 24	Jan 30	32	Aug 1	Aug 7
6	Jan 31	Feb 6	33	Aug 8	Aug 14
7	Feb 7	Feb 13	34	Aug 15	Aug 21
8	Feb 14	Feb 20	35	Aug 22	Aug 28
9	Feb 21	Feb 27	36	Aug 29	Sep 4
10	Feb 28	Mar 6	37	Sep 5	Sep 11
11	Mar 7	Mar 13	38	Sep 12	Sep 18
12	Mar 14	Mar 20	39	Sep 19	Sep 25
13	Mar 21	Mar 27	40	Sep 26	Oct 2
14	Mar 28	Apr 3	41	Oct 3	Oct 9
15	Apr 4	Apr 10	42	Oct 10	Oct 16
16	Apr 11	Apr 17	43	Oct 17	Oct 23
17	Apr 18	Apr 24	44	Oct 24	Oct 30
18	Apr 25	May 1	45	Oct 31	Nov 6
19	May 2	May 8	46	Nov 7	Nov 13
20	May 9	May 15	47	Nov 14	Nov 20
21	May 16	May 22	48	Nov 21	Nov 27
22	May 23	May 29	49	Nov 28	Dec 4
23	May 30	Jun 5	50	Dec 5	Dec 11
24	Jun 6	Jun 12	51	Dec 12	Dec 18
25	Jun 13	Jun 19	52	Dec 19	Dec 25
26	Jun 20	Jun 26	53	Dec 26	Dec 31
27	Jun 27	Jul 3			

Tag Decoding

Chinook salmon heads which arrived at the head lab were examined for the presence of a coded wire tag. If the head contained a coded wire tag, the tag was removed and decoded. Heads without tags were x-rayed to guarantee absence of a tag. All this information was entered into a Honeywell mainframe computer located at the University of Alaska, Fairbanks and later copied onto tape and stored at the State of Alaska's IBM mainframe computer located in Juneau, Alaska.

Commercial Catch Data

Commercial catch data were obtained from fish tickets received from buyers of fish. Each buyer is required by Alaska statute to maintain a record of the type of vessel and gear, the date of landing, the number and pounds of each species, and the statistical area of capture. During summarization of the data, sample sizes which exceeded the catch were encountered in a few strata having small catches. In these cases, sample was made equal to the catch.

Tagging and release data associated with each micro-wire tag code are published by the PMFC (Johnson 1985). The species, run type, brood year, agency conducting the tagging study, hatchery of rearing (or release site for wild stocks), release site, month and year of release, estimated number of fish released carrying a coded wire tag, estimated number of untagged fish released, estimated percentage of tagged fish which shed the tag before release, and type of production (hatchery, experimental, or wild) are reported for each tag code. The estimated contribution of chinook salmon belonging to each tag code recovered in the fishery were merged with the PMFC tagging data and are available on request[1]. The fish age at recovery is expressed in European notation[2]. The freshwater age of fish released from wild stock is assumed to be the same as the fishes age at the time of tagging. Commercial catch data, CWT recovery data, and the tagging and release data are accessible from tapes located at the State's IBM mainframe located in Juneau or on the University of Alaska's (Honeywell) mainframe. Data on the mainframe was downloaded to floppy disks and summarized with basic and pascal language programs operating on microcomputers, and by hand.

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[1] The appendix is available on request from the Alaska Department of Fish and Game, Division of Commercial Fisheries, P.O. Box 3-2000, Juneau, Alaska 99802.

[2] European notation: Numerals preceding the decimal refer to the number of freshwater annuli, numerals following the decimal are the number of marine annuli. Total age from the brood year is the sum of these two numbers plus one.

Estimation Procedures

Methods for estimating the number of tags of a given tag code in the commercial catch and the variance of this estimate, the number of tagged fish in the entire release group identified by the given tag code and the variance of this estimate, and the total number of fish originating from a particular agency or geographic region in the commercial catch, and the variances and covariances associated with this estimate were derived and discussed at length in Clark and Bernard (in prep.). This method estimates the total number of fish of a given release group in a time-area-gear stratum by adjusting the number of tags decoded with expansion factors for lost tags, lost heads, the unsampled fraction of commercial catch, and the untagged fish in the release group. The variance of this estimate is, in part, a function of the uncertainty in estimating the number of tags of a given tag code in the lost tags, the lost heads, and the unsampled fraction of the commercial catch. The variance is also dependent upon the uncertainty tagged to untagged ratio in a given release group in the commercial catch, which in turn is dependent upon the tagged to untagged ratio in the hatchery release.

Let θ by the proportion of fish tagged of a given release group (total number of tags inserted less tag loss and mortalities of tagged fish, divided by the total number of tagged and untagged fish), n_2 be the number of fish sampled out of N total fish caught in a stratum of interest in the commercial fishery, a_1 be the number of fish observed without adipose fins of which a_2 heads arrive at the lab (the difference being the number of heads lost), m_1 be the number of tags detected of which m_2 tags were decoded (the difference being the number of tags lost in the lab), and m_c be the number of tags of a given tag code found in the stratum of interest. The estimate of the number of tags of the given tag code in the stratum ($\hat{C}_T$) is:

$$\hat{C}_T = \left(\frac{N}{n_2}\right)\left(\frac{a_1}{a_2}\right)\left(\frac{m_1}{m_2}\right) m_c$$

The estimated number of fish of the release group identified by the given tag code and harvested in the stratum of interest ($\hat{C}_R$) is:

$$\hat{C}_R = \left(\frac{N}{n_2}\right)\left(\frac{a_1}{a_2}\right)\left(\frac{m_1}{m_2}\right)\left(\frac{m_c}{\theta}\right)$$

The estimated variances of $\hat{C}_T$ and $\hat{C}_R$, $S^2(\hat{C}_T)$ and $S^2(\hat{C}_R)$ respectively, are:

$$S^2(\hat{C}_T) = \frac{m_1^2\,(m_2-1)\,a_1^2\,(a_2-1)\,N^2\,(n_2-1)\,m_c}{m_2^2\,(m_1-1)\,a_2^2\,(a_1-1)\,n_2^2\,(N-1)}\left(\frac{m_c m_1 a_1 N}{m_2 a_2 n_2} - 1\right)$$

$$+ \left(\frac{N}{n_2}\right)^2\left(\frac{a_1}{a_2}\right)^2\left(\frac{m_1}{m_2}\right)^2 m_c - \left(\frac{m_c m_1 a_1 N}{m_2 a_2 n_2}\right)^2$$

and

$$S^2(\hat{C}_R) = \frac{n_1^2 (m_2-1) a_1^2 (a_2-1) N^2 (n_2-1) m_C}{m_2^2 (m_1-1) a_2^2 (a_1-1) n_2^2 (N-1) \Theta} \left(\frac{m_C m_1 a_1 N}{m_2 a_2 n_2 \Theta} - 1 \right)$$

$$+ \left(\frac{N}{n^2} \right)^2 \left(\frac{a_1}{a_2} \right)^2 \left(\frac{m_1}{m_2} \right)^2 \frac{m_C}{\Theta^2} - \left(\frac{m_C m_1 a_1 N}{m_2 a_2 n_2 \Theta} \right)^2$$

Estimates of the total number of tags and total number of fish, which belong to a given tagged release in the 1982 commercial harvest are calculated by summing the estimated number of tags and fish estimated in the catch for each individual time-area-gear sampling strata. Assuming that each sampling strata is independent of other sampling strata, the variance of the total contribution is found by summing variances over strata. The standard error is the square root of the variance.

To estimate the standard error of the total contribution by hatchery or jurisdiction to certain gear strata, a multivariate hypergeometric distribution replaces the univariate hypergeometric distribution (Clark and Bernard, in prep.). One result of this is acknowledgment of a significant and negative covariance which originates from the same hatchery or jurisdiction (into the same time-area-gear stratum):

$$\text{Cov} (\hat{C}_{R_1}; \hat{C}_{R_2}) = \frac{m_{C_1} m_{C_2} m_1^2 N^2}{m_2^3 a_2^3 n_2^3 \Theta_1 \Theta_2} \left[\left(m_2 - \frac{m_1-m_2}{m_1-1} \right) \right.$$

$$\left. \left(a_2 - \frac{a_1-a_2}{a_1-1} \right) \left(n_2 - \frac{N-n_2}{n-1} \right) - m_2 a_2 n_2 \right]$$

where for a defined stratum C_{R_X} is the number of fish of tag release x in the commercial catch, m_{C_X} is the number of tags of tag code x recovered, and Θ_X is the proportion of fish tagged of tag code x. The variance of the total estimated contribution of each agency and jurisdiction for n number of tag codes is calculated as:

$$S^2 \left(\sum_{i=1}^{n} \hat{C}_{R_i} \right) = \sum_{i=1}^{n} S^2 (\hat{C}_{R_i}) + 2 \sum_{i<j} \sum \text{Cov} (\hat{C}_{R_i}; \hat{C}_{R_j})$$

The implicit assumptions in the preceding method of estimating the contribution and variances, in general, pertain to the randomness of each sampling

event. Also failure to enumerate the exact number of tagged and number of untagged fish at release results in errors and biases in the proportions of release which are tagged (Clark and Bernard, in prep.). Recent information suggest that there is a tendency to overestimate the untagged number of released fish (F. Delibrio, PMFC, personal communication to S. Marshall; B. Riddel, CDFO, personal communication to S. Marshall; H. Geiger, ADF&G, FRED Division, memo to M. Seibel). This would result in overestimation of the contribution of a release group.

In the majority of release groups, an estimate of the percentage of tagged fish which shed the coded wire tag before being released was obtained. In the few groups where no attempt was made to estimate coded wire tag loss before release, an average tag loss value of 3.9% was assumed (see Table 3) and the numbers of marked and unmarked chinook salmon reported by Johnson (1985) were adjusted accordingly.

RESULTS

The goal of sampling at least 20% of the commercial chinook salmon catch was met or exceeded for all gear types except fish trap gear, where only 3 of 553 fish were examined for missing adipose fins. Twenty-four percent of the gillnet catch was sampled (Table 4). Chinook salmon catches and sampling effort were highest prior to week 30. No fish were sampled in the terminal set gillnet fisheries of Districts 182 and 183 since no coded microwire tagged fish were expected to return to any Yakutat area rivers. Thirty percent of the reported purse seine catch was sampled (Table 5). With the exception of Districts 103, 113, and 114 (in which only 529 of the 31,376 purse seine harvested chinook salmon were sampled) all districts were sampled at proportions exceeding 0.20. The earlier statistical weeks (statistical weeks 28-32) were sampled more intensely (34% or greater) than later statistical weeks.

Overall, 34% of the commercial troll caught fish were sampled by district (Table 6), 40% by PMFC area (Table 7), and 44% by quadrant area (Table 8). The percentage of the catch sampled increased when samples from mixed district catches were included in the pooled district strata. Of the 111,136 fish examined for a missing adipose fin and assigned a quadrant of catch, only 85,863, or 77%, could also be assigned to a district of catch and 99,861 (90%) to a PMFC area. This resulted from the mobile nature of the troll fleet and was indicative of the limitations of catch data assigned to a single district when fish are often caught in more than one district. Because of the large number of mixed or unknown district and PMFC area catch (and sample) data present in the troll record, quadrant groupings of the data were chosen as the most appropriate to estimate total contribution of a tagged release group to the troll fishery. No sampling occurred during the 1 October to 31 December 1982 period of the winter fishery when 12,517 fish were harvested. All PMFC areas except Lynn Canal were sampled at overall rates above 20%. No quadrant was sampled at an overall rate less than 30%.

Table 3. Estimated percentage of the tagged fish which shed the tag before being released and the relationship of this tag loss to the number of days after completion of tagging when tag loss sample was taken, number of fish per pound (size), number of fish tagged, and brood year of tagged group.

Measurement	Mean	Standard Deviation	Number of Obs.	Correlation with tag loss
Tag loss	3.92%	4.32%	1450	1.000
Days after Tag when loss meas.	51.58	65.92	1450	0.108
Nat. log. (ln) of loss days	3.00	1.57	1450	0.211
Num Per lb.	642.21	946.75	1422	0.129
Total Number Tagged	47509.	45927.	1450	0.026
Brood Year	1978.64	1.68	1450	-0.038

Table 4. Commercial catch, number of samples, and proportion of commercial catch sampled by statistical week and district for chinook salmon harvested by fishtrap and by the gillnet fleet in Southeastern Alaska in 1982.

	Fishtrap			Gillnet District																						
	101			101			106			108			111			115			182			183			TOTAL		
Stat Week	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop
24																			398	0	0.00				398	0	0.00
25				74	0	0.00	62	33	0.53	215	43	0.20	466	225	0.48	190	0	0.00	108	0	0.00	153	0	0.00	1268	301	0.24
26				1173	657	0.56	409	73	0.18	114	0	0.00	493	362	0.73	273	0	0.00	69	0	0.00	33	0	0.00	2564	1092	0.43
27	40	0	0.00	1296	393	0.30	422	85	0.20	291	2	0.01	731	339	0.46	914	47	0.05	153	0	0.00	47	0	0.00	3854	866	0.22
28	233	0	0.00	315	104	0.33	415	130	0.31	94	0	0.00	215	151	0.70	424	106	0.25	151	0	0.00	70	6	0.09	1684	497	0.30
29	124	0	0.00	806	81	0.10	94	29	0.31				562	224	0.40	247	214	0.87	73	0	0.00	18	0	0.00	1800	548	0.30
30	64	0	0.00	107	48	0.45	24	24	1.00				100	2	0.02	827	0	0.00	33	0	0.00	32	0	0.00	1123	74	0.07
31	59	0	0.00	157	25	0.16	58	10	0.17				87	0	0.00	835	406	0.49	12	0	0.00	47	0	0.00	1196	441	0.37
32	16	3	0.19	73	17	0.23							133	6	0.05	1370	207	0.15	5	0	0.00	20	0	0.00	1601	230	0.14
33	15	0	0.00	16	0	0.00				42	5	0.12	69	3	0.04	234	3	0.01	6	0	0.00	11	0	0.00	378	11	0.03
34				29	4	0.14	19	15	0.79	58	12	0.21	44	8	0.18	183	0	0.00				13	0	0.00	346	39	0.11
35				29	13	0.45	43	4	0.09	42	17	0.40	44	0	0.00	166	0	0.00	2	0	0.00				326	34	0.10
36	2	0	0.00	9	1	0.11	55	0	0.00	48	0	0.00	61	0	0.00	44	5	0.11	1	0	0.00				218	6	0.03
37				10	2	0.20	51	3	0.06	92	0	0.00	26	2	0.08	32	0	0.00							211	7	0.03
38				452	2	0.00	20	20	1.00	18	12	0.67	26	1	0.04	30	0	0.00				1	0	0.00	547	35	0.06
39																20	0	0.00							20	0	0.00
40																23	0	0.00							23	0	0.00
41																120	3	0.02							120	3	0.02
42																9	0	0.00							9	0	0.00
43																4	0	0.00							4	0	0.00
Total	553	3	0.01	4546	1347	0.30	1672	426	0.25	1014	91	0.09	3057	1323	0.43	5945	991	0.17	1011	0	0.00	445	6	0.01	17690	4184	0.24

Table 5. Commercial catch, number of samples, and proportion of commercial catch sampled by statistical week and district for chinook salmon harvested by the purse seine fleet in Southeastern Alaska in 1982.

	Purse Seine District																				
	101			102			103			104			105			107			109		
Stat Week	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop
27										16	0	0.00									
28	378	84	0.22							1758	804	0.46									
29	550	470	0.85	99	18	0.18				1071	1071	1.00									
30	226	152	0.67	347	138	0.40				1063	328	0.31									
31	59	59	1.00	106	54	0.51				459	198	0.43									
32	144	144	1.00	537	396	0.74				2429	411	0.17							492	236	0.48
33	236	93	0.39	721	280	0.39				6574	969	0.15							140	85	0.61
34	177	115	0.65	1391	302	0.22	46	9	0.20	4201	934	0.22				18	18	1.00	48	1	0.02
35	116	3	0.03	557	36	0.06	240	4	0.02	2673	368	0.14							6	0	0.00
36	46	46	1.00	137	69	0.50	96	4	0.04	995	186	0.19	2	2	1.00				5	0	0.00
37	3	0	0.00	6	0	0.00	11	2	0.18	239	85	0.36									
38																					
39																					
40				1	0	0.00															
41				4	0	0.00															
42				1	0	0.00															
Total	1935	1166	0.60	3907	1293	0.33	393	19	0.05	21478	5354	0.25	2	2	1.00	18	18	1.00	691	322	0.47

-Continued-

Table 5. Commercial catch, number of samples, and proportion of commercial catch sampled by statistical week and district for chinook salmon harvested by the purse seine fleet in Southeastern Alaska in 1982 (continued).

	Purse Seine District																	
	110			111			112			113			114			TOTAL		
Stat Week	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop
27																16	0	0.00
28																2136	888	0.42
29							117	106	0.91							1837	1665	0.91
30							262	262	1.00	47	2	0.04				1945	882	0.45
31							228	85	0.37							852	396	0.46
32	774	282	0.36	298	91	0.31	215	104	0.48							4889	1664	0.34
33	487	90	0.18	8	0	0.00	89	7	0.08	22	0	0.00				8277	1524	0.18
34	162	30	0.19				90	23	0.26	16	0	0.00				6149	1432	0.23
35	50	0	0.00				29	0	0.00	40	1	0.02	3	0	0.00	3714	412	0.11
36							6	3	0.50	5	1	0.20	3	0	0.00	1295	311	0.24
37							1	1	1.00							260	88	0.34
38																		
39																		
40																1	0	0.00
41																4	0	0.00
42																1	0	0.00
Total	1473	402	0.27	306	91	0.30	1037	591	0.57	130	4	0.03	6	0	0.00	31376	9262	0.30

Table 6. Commercial catch, number of samples, and proportion of commercial catch sampled by statistical week and district for chinook salmon harvested by hand and power troll gear in Southeastern Alaska in 1982 (1/1/82 to 12/31/82).

	Troll District																											
	101			102			103			104 & 152			105			106			107			108			109			110		
Stat Week	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop
1 -16	148	45	0.30	102	28	0.27	1055	192	0.18	631	459	0.73	445	159	0.36	692	259	0.37	2	2	1.00	31	0	0.00	378	378	1.00	474	150	0.32
20-22	56	16	0.29	670	485	0.72	1050	25	0.02	7247	3267	0.45	443	45	0.10	18	18	1.00	581	44	0.08	10	0	0.00	1318	242	0.18	1079	355	0.33
23	42	42	1.00	1079	545	0.51	1486	175	0.12	2189	1677	0.77	420	296	0.70	84	84	1.00	581	0	0.00				976	976	1.00	430	272	0.63
24-25	445	307	0.69	1651	1181	0.72	1978	356	0.18	2972	1292	0.43	225	99	0.44	245	212	0.87	895	140	0.16	182	0	0.00	1481	799	0.54	1284	791	0.62
25-26	970	553	0.57	1692	1385	0.82	2312	83	0.04	3493	627	0.18	728	285	0.39	538	251	0.47	536	70	0.13	2	2	1.00	1583	575	0.36	1644	633	0.39
27	506	325	0.64	1346	949	0.71	2125	140	0.07	2598	631	0.24	255	113	0.44	123	45	0.37	306	0	0.00	14	5	0.36	2108	727	0.34	451	116	0.26
28	323	203	0.63	979	462	0.47	1021	84	0.08	1932	284	0.15	214	134	0.63	65	65	1.00	101	0	0.00	13	0	0.00	1463	827	0.57	664	408	0.61
29	907	441	0.49	834	589	0.71	1287	66	0.05	2074	361	0.17	272	115	0.42	135	21	0.16	110	0	0.00				1634	416	0.25	421	172	0.41
30	510	348	0.68	1181	704	0.60	1048	76	0.07	1558	110	0.07	175	28	0.16	395	217	0.55	46	0	0.00				1341	1341	1.00	514	203	0.39
31-32	1612	1073	0.67	1042	821	0.79	783	105	0.13	1229	378	0.31	327	123	0.38	562	282	0.50	29	0	0.00				1307	867	0.66	701	422	0.60
40-53	1453	0	0.00	1659	0	0.00	130	0	0.00	124	0	0.00	54	0	0.00	882	0	0.00	878	0	0.00	469	0	0.00	609	0	0.00	470	0	0.00
Total	6972	3353	0.48	12235	7149	0.58	14275	1302	0.09	26047	9086	0.35	3558	1397	0.39	3739	1454	0.39	4065	256	0.06	721	7	0.01	14198	7148	0.50	8132	3522	0.43

-Continued-

Table 6. Commercial catch, number of samples, and proportion of commercial catch sampled by statistical week and district for chinook salmon harvested by hand and power troll gear in Southeastern Alaska in 1982 (1/1/82 to 12/31/82) - continued.

	Troll District																											
	111			112			113 & 154			114			115			116 & 157			181			183			189			TOTAL		
Stat Week	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop
1 -16				38	2	0.05	2632	869	0.33	1051	506	0.48				64	40	0.63				10	0	0.00				7753	3089	0.40
20-22	10	8	0.80	214	66	0.31	9504	2599	0.27	2285	678	0.30				1922	1066	0.55	1007	464	0.46	198	0	0.00	3164	404	0.13	30776	9782	0.32
23				172	32	0.19	9630	3997	0.42	2484	352	0.14	59	0	0.00	1060	1060	1.00	661	0	0.00	27	0	0.00	1608	445	0.28	22988	9953	0.43
24-25				347	160	0.46	8423	3886	0.46	1962	539	0.27				8860	4535	0.51	1279	114	0.09	70	0	0.00	3417	668	0.20	35716	15079	0.42
25-26	273	243	0.89	496	0	0.00	12317	5674	0.46	1611	11	0.01	11	11	1.00	3975	735	0.18	497	99	0.20	80	0	0.00	803	387	0.48	33561	11624	0.35
27	96	56	0.58	409	361	0.88	9749	3699	0.38	1215	144	0.12	13	0	0.00	2307	835	0.36	553	0	0.00	386	0	0.00	293	157	0.54	24853	8303	0.33
28				361	232	0.64	7254	2293	0.32	1002	18	0.02	11	0	0.00	476	40	0.08	92	0	0.00	85	0	0.00	602	0	0.00	16658	5050	0.30
29	100	0	0.00	541	390	0.72	10976	3531	0.32	1166	16	0.01	33	0	0.00	1356	604	0.45	14	0	0.00	103	0	0.00	1145	0	0.00	23108	6722	0.29
30	39	0	0.00	415	286	0.69	10090	3160	0.31	1007	54	0.05	14	0	0.00	482	482	1.00				159	4	0.03	339	0	0.00	19313	7013	0.36
31-32	60	26	0.43	277	277	1.00	10561	3507	0.33	999	263	0.26	45	0	0.00	2013	1104	0.55	69	0	0.00	378	0	0.00	623	0	0.00	22617	9248	0.41
40-53	1	0	0.00	51	0	0.00	3494	0	0.00	2118	0	0.00										125	0	0.00				12517	0	0.00
Total	579	333	0.58	3321	1806	0.54	94630	33215	0.35	16900	2581	0.15	186	11	0.06	22515	10501	0.47	4172	677	0.16	1621	4	0.00	11994	2061	0.17	249860	85863	0.34

Table 7. Commercial catch, number of samples, and proportion of commercial catch sampled by statistical week and PMFC area for chinook salmon harvested by hand and power troll gear in Southeastern Alaska in 1982 (1/1/82 to 12/31/82) - continued.

Stat Week	PMFC Troll Area [1]																													
	NOUT			COUT			SOUT			SIN			SNTR			CIN			STEP			CNTR			LYNN			TOTAL		
	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop
1 -16	74	40	0.54	2632	869	0.33	1686	741	0.44	250	77	0.31	1297	880	0,68	725	261	0.36				1089	508	0.47				7753	3376	0.44
20-22	6291	3378	0.54	9504	2599	0.27	8297	3872	0.47	726	501	0.69	2840	642	0.23	609	159	0.26	10	8	0.80	2499	809	0.32				30776	11968	0.39
23	3356	2463	0.73	9630	4585	0.48	3675	2143	0.58	1121	685	0.61	1826	1826	1.00	665	110	0.17				2656	384	0.14	59	0	0.00	22988	12196	0.53
24-25	13626	9179	0.67	8423	3922	0.47	4950	2366	0.48	2096	1488	0.71	2990	1934	0.65	1322	480	0.36				2309	699	0.30				35716	20068	0.56
25-26	5355	1697	0.32	12317	5923	0.48	5805	1116	0.19	2662	1939	0.73	3955	1532	0.39	1076	499	0.46	273	243	0.89	2107	23	0.01	11	11	1.00	33561	12983	0.39
27	3539	1563	0.44	9749	4289	0.44	4723	833	0.18	1852	1286	0.69	2814	1010	0.36	443	50	0.11	96	56	0.58	1624	505	0.31	13	0	0.00	24853	9592	0.39
28	1255	168	0.13	7254	2293	0.32	2953	378	0.13	1302	682	0.52	2341	1369	0.58	179	179	1.00				1363	250	0.18	11	0	0.00	16658	5319	0.32
29	2618	604	0.23	10976	3611	0.33	3361	427	0.13	1741	1075	0.62	2327	830	0.36	245	21	0.09	100	0	0.00	1707	406	0.24	33	0	0.00	23108	6974	0.30
30	980	649	0.66	10090	3225	0.32	2606	294	0.11	1691	1177	0.70	2030	1611	0.79	441	217	0.49	39	0	0.00	1422	340	0.24	14	0	0.00	19313	7513	0.39
31-32	3083	1274	0.41	10561	3816	0.36	2012	483	0.24	2654	1898	0.72	2335	1444	0.62	591	282	0.48	60	26	0.43	1276	649	0.51	45	0	0.00	22617	9872	0.44
40-53	125	0	0.00	3494	0	0.00	254	0	0.00	3112	0	0.00	1133	0	0.00	2229	0	0.00	1	0	0.00	2169	0	0.00				12517	0	0.00
Total	40302	21015	0.52	94630	35132	0.37	40322	12653	0.31	19207	10808	0.56	25888	13078	0.51	8525	2258	0.26	579	333	0.58	20221	4573	0.23	186	11	0.06	249860	99861	0.40

[1] NOUT = Northern Outside
COUT = Central Outside
SOUT = Southern Outside
SIN = Southern Inside
SNTR = Southern Intermediate
CIN = Central Inside
STEP = Stephens Passage
CNTR = Central Intermediate
LYNN = Lynn Canal

Table 8. Commercial catch, number of samples, and proportion of commercial catch sampled by statistical week and quadrant area for chinook salmon harvested by hand and power troll gear in Southeastern Alaska in 1982 (1/1/82 to 12/31/82).

	Troll Quadrant														
	NOUT			SOUT			NIN			SIN			TOTAL		
Stat Week	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop	Catch	Samp	Prop
1 -16	3757	1415	0.38	1686	741	0.44	890	723	0.81	1420	587	0.41	7753	3466	0.45
20-22	18080	7484	0.41	8297	3872	0.47	2621	671	0.26	1778	705	0.40	30776	12732	0.41
23	15470	9598	0.62	3675	2143	0.58	1637	1637	1.00	2206	1091	0.49	22988	14469	0.63
24-25	24011	14228	0.59	4950	2366	0.48	3112	1992	0.64	3643	2067	0.57	35716	20653	0.58
25-26	19283	9407	0.49	5805	1116	0.19	4007	1808	0.45	4466	2887	0.65	33561	15218	0.45
27	14503	7535	0.52	4723	833	0.18	3077	1280	0.42	2550	1668	0.65	24853	11316	0.46
28	9511	2971	0.31	2953	378	0.13	2499	1639	0.66	1695	997	0.59	16658	5985	0.36
29	14760	6259	0.42	3361	427	0.13	2729	1098	0.40	2258	1211	0.54	23108	8995	0.39
30	12077	4446	0.37	2606	294	0.11	2323	1846	0.79	2307	1422	0.62	19313	8008	0.41
31-32	14643	5807	0.40	2012	483	0.24	2390	1701	0.71	3572	2303	0.64	22617	10294	0.46
40-53	5737	0	0.00	254	0	0.00	1131	0	0.00	5395	0	0.00	12517	0	0.00
Total	151832	69150	0.46	40322	12653	0.31	26416	14395	0.54	31290	14938	0.48	249860	111136	0.44

Expansion factors used to correct for lost heads varied by time, area, and gear type. A total of 3,387 chinook salmon with missing adipose fins was counted and marked by a strap tag in 1982. Of the 66 adiposeless fish sampled from gillnet catches, eight heads (12.1%) did not arrive at the tag lab (Table 9). Purse seine head loss was 11.9% of the 312 adipose fin-clipped fish counted (Table 10). A high proportion of heads of purse seine clipped fish harvested in Districts 109 and 112 were lost before arrival at the head lab (25% and 32%, respectively). Less than 8% of the strap tagged heads from the troll catch were lost prior to arrival at the head lab (Tables 11-13). The proportion of lost heads tended to be highest in the later statistical weeks (30-33).

Expansion factors used to correct for lost tags also varied greatly. A total of 2,825 coded wire tags was dissected from the 1982 Southeastern Alaska chinook salmon harvest, of which 6 were found to be unreadable, 13 were lost prior to decoding, and 2 contained an incongruous code. The 2,806 tags which were decoded represented 389 different tag codes. The troll fishery accounted for 2,181 of these tags, the purse seine fishery for 286 tags, the gillnet fishery for 69 tags, and unknown gear for 270 tags.

A statistical week of catch was recorded for all recovered tags, however, area of catch was unknown for 11 gillnet coded wire tag recoveries, 17 purse seine recoveries, and 144 troll recoveries (by quadrant).

A total of 389 tag codes, representing both wild, production, and experimental tagging operations, were recovered in the 1982 calendar year commercial catch sampling program. The contributions of tagged releases to the commercial fishery and the standard error of these estimates for each tag code by fishery, time, and area strata are presented for Alaska tagged releases (Appendix A), British Columbia tagged releases (Appendix B), Washington and Idaho tagged releases (Appendix C), and Oregon tagged releases (Appendix D). Appendices are under separate cover and available from ADF&G upon request (see footnote 1, page 7). Researchers and managers interested in estimates of tag group contributions by time and area strata are encouraged to reference these appendices.

The estimated numbers of commercially caught coded wire tagged chinook salmon which belong to wild stocks were tabulated by jurisdiction, release site, and tag code (Table 14). Tags were recovered from stocks of 22 different release sites. Comparisons of tag contribution by region or release site for the wild stock data must be interpreted with caution since the tagged to untagged ratio is unknown. The numbers (No.) and standard errors (S.E.) in Table 14, therefore, represent only the estimates of the number of tagged fish in the catch. Because of this, the estimated numbers of tagged wild stock fish in the commercial catch are not summed for region or release site. Tag codes corresponding to Columbia River release sites were found relatively more frequently in commercial catches (23 different tag codes of Columbia River origin were recovered in the chinook salmon catch, of which tag code 768677 [LBYWLG, a color-coded tag] was represent by 127 expanded recoveries alone).

Four Alaskan hatcheries contributed fish to the Southeastern Alaska fisheries; Crystal Lake, Deer Mountain, Little Port Walter, and Snettisham (Table 15).

Table 9. Number of adipose clipped chinook salmon sampled (Clip), differences between the number of heads arriving at the lab and the number of adipose clips sampled (Lost), and the ratio of this difference to the number of adipose clipped chinook counted (Frac) from the 1982 fishtrap and gillnet fisheries in Southeastern Alaska by statistical week and ADF&G district.

	Gillnet District																	
	101			106			108			111			115			TOTAL		
Stat Week	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac
25							3	1	0.333	1	0	0.000				4	1	0.250
26	25	3	0.120	2	0	0.000				1	0	0.000				28	3	0.107
27	11	2	0.182							3	0	0.000				14	2	0.143
28	1	0	0.000	2	0	0.000										3	0	0.000
29	5	0	0.000							3	1	0.333	2	0	0.000	10	1	0.100
30	2	1	0.500													2	1	0.500
31													1	0	0.000	1	0	0.000
32													3	0	0.000	3	0	0.000
34							1	0	0.000							1	0	0.000
Total	44	6	0.136	4	0	0.000	4	1	0.250	8	1	0.125	6	0	0.000	66	8	0.121

Table 10. Number of adipose clipped chinook salmon sampled (Clip), difference between the number of heads arriving at the lab and the number of adipose clips sampled (Lost), and the ratio of this difference to the number of adipose clipped chinook counted (Frac) from the 1982 purse seine fisheries in Southeastern Alaska by statistical week and ADF&G district.

	Purse Seine District																											
	101			102			104			105			107			109			110			111			112			TOTAL		
Stat Week	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac
28							15	2	0.133																			15	2	0.133
29	20	1	0.050				9	1	0.111																5	4	0.800	34	6	0.176
30	3	1	0.333	6	1	0.167	10	2	0.200																10	2	0.200	29	6	0.207
31	2	0	0.000	2	0	0.000	4	1	0.250																2	0	0.000	10	1	0.100
32	27	0	0.000	9	1	0.111	5	0	0.000							36	8	0.222	11	0	0.000	8	0	0.000	5	2	0.400	101	11	0.109
33	15	0	0.000	13	0	0.000	16	1	0.063							4	2	0.500	4	0	0.000							52	3	0.058
34	1	0	0.000	10	0	0.000	21	5	0.238				1	0	0.000				2	0	0.000				3	0	0.000	38	5	0.132
35				1	0	0.000	6	2	0.333																			7	2	0.286
36	17	0	0.000	4	0	0.000	3	1	0.333	2	0	0.000																26	1	0.038
Total	85	2	0.024	45	2	0.044	89	15	0.169	2	0	0.000	1	0	0.000	40	10	0.250	17	0	0.000	8	0	0.000	25	8	0.320	312	37	0.119

Table 11. Number of adipose clipped chinook salmon sampled (Clip), difference between the number of heads arriving at the lab and the number of adipose clips sampled (Lost), and the ratio of this difference to the number of adipose clipped chinook counted (Frac) from the 1982 (calendar year) troll fisheries in Southeastern Alaska by statistical week and ADF&G district.

	Troll District																											
	101			102			103			104 & 152			105			106			107			108			109			110		
Stat Week	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac
1 -16	2	0	0.000				4	0	0.000	9	0	0.000	4	0	0.000	1	0	0.000							10	0	0.000	3	0	0.000
20-22				19	1	0.053	1	0	0.000	55	1	0.018				2	0	0.000	2	0	0.000				7	0	0.000	5	0	0.000
23	1	0	0.000	14	3	0.214	7	1	0.143	32	0	0.000	4	0	0.000	4	0	0.000							55	1	0.018	4	0	0.000
24-25	8	0	0.000	27	4	0.148	13	0	0.000	27	5	0.185	1	0	0.000	2	0	0.000							31	2	0.065	24	1	0.042
25-26	10	3	0.300	40	2	0.050	2	0	0.000	12	1	0.083	4	0	0.000	11	0	0.000				2	0	0.000	25	0	0.000	20	1	0.050
27	11	1	0.091	27	0	0.000	2	1	0.500	13	0	0.000	2	0	0.000										36	1	0.028	2	0	0.000
28	5	0	0.000	12	1	0.083	1	0	0.000	5	1	0.200	6	0	0.000	8	0	0.000							30	1	0.033	9	0	0.000
29	11	1	0.091	9	1	0.111				8	0	0.000	2	0	0.000										25	1	0.040	5	0	0.000
30	11	0	0.000	20	1	0.050	2	0	0.000				1	0	0.000	3	0	0.000							44	14	0.318	9	2	0.222
31-32	26	1	0.038	17	2	0.118	4	0	0.000	8	3	0.375				6	0	0.000							24	9	0.375	14	1	0.071
Total	85	6	0.071	185	15	0.081	36	2	0.056	169	11	0.065	24	0	0.000	37	0	0.000	2	0	0.000	2	0	0.000	287	29	0.101	95	5	0.053

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Table 11. Number of adipose clipped chinook salmon sampled (Clip), difference between the number of heads arriving at the lab and the number of adipose clips sampled (Lost), and the ratio of this difference to the number of adipose clipped chinook counted (Frac) from the 1982 (calendar year) troll fisheries in Southeastern Alaska by statistical week and ADF&G district (continued).

	Troll District																							
	111			112			113 & 154			114			116 & 157			181			189			TOTAL		
Stat Week	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac
1 -16							25	0	0.000	8	0	0.000	1	0	0.000							67	0	0.000
20-22				4	0	0.000	79	0	0.000	8	0	0.000	17	0	0.000	12	0	0.000	8	0	0.000	219	2	0.009
23				1	0	0.000	75	4	0.053	6	0	0.000	17	3	0.176				8	0	0.000	228	12	0.053
24-25							68	7	0.103	9	0	0.000	83	3	0.036	3	0	0.000	11	0	0.000	307	22	0.072
25-26	5	1	0.200				92	9	0.098				20	0	0.000				6	0	0.000	249	17	0.068
27				4	0	0.000	64	6	0.094	2	0	0.000	14	0	0.000				2	1	0.500	179	10	0.056
28				10	2	0.200	56	2	0.036													142	7	0.049
29				9	1	0.111	51	8	0.157				17	0	0.000							137	12	0.088
30				7	4	0.571	74	13	0.176	1	0	0.000	11	1	0.091							183	35	0.191
31-32				10	1	0.100	70	10	0.143	4	0	0.000	24	0	0.000							207	27	0.130
Total	5	1	0.200	45	8	0.178	654	59	0.090	38	0	0.000	204	7	0.034	15	0	0.000	35	1	0.029	1918	144	0.075

Table 12. Number of adipose clipped chinook salmon sampled (Clip), difference between the number of heads arriving at the lab and the number of adipose clips sampled (Lost), and the ratio of this difference to the number of adipose clipped chinook counted (Frac) from the 1982 (calendar year) troll fisheries in Southeastern Alaska by statistical week and PMFC area.

	PMFC Troll Area[1]																										
	NOUT			COUT			SOUT			SIN			SNTR			CIN			STEP			CNTR			TOTAL		
Stat Week	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac
1 -16	1	0	0.000	25	0	0.000	14	0	0.000	2	0	0.000	18	0	0.000	1	0	0.000				8	0	0.000	69	0	0.000
20-22	64	0	0.000	79	0	0.000	69	1	0.014	19	1	0.053	12	0	0.000	4	0	0.000				13	0	0.000	260	2	0.008
23	43	5	0.116	80	4	0.050	48	1	0.021	15	3	0.200	64	1	0.016	4	0	0.000				7	0	0.000	261	14	0.054
24-25	194	7	0.036	69	7	0.101	54	6	0.111	35	4	0.114	70	3	0.043	4	0	0.000				9	0	0.000	435	27	0.062
25-26	41	1	0.024	102	9	0.088	25	2	0.080	50	5	0.100	49	0	0.000	13	0	0.000	5	1	0.200				285	18	0.063
27	34	3	0.088	77	6	0.078	20	1	0.050	38	1	0.026	42	1	0.024							6	0	0.000	217	12	0.055
28	6	0	0.000	56	2	0.036	6	1	0.167	20	2	0.100	45	3	0.067	8	0	0.000				11	3	0.273	152	11	0.072
29	17	0	0.000	56	8	0.143	9	1	0.111	22	2	0.091	33	1	0.030							9	1	0.111	146	13	0.089
30	11	1	0.091	76	13	0.171	7	2	0.286	37	2	0.054	55	16	0.291	3	0	0.000				8	4	0.500	197	38	0.193
31-32	24	0	0.000	74	10	0.135	12	3	0.250	43	3	0.070	41	11	0.268	6	0	0.000				14	1	0.071	214	28	0.131
Total	435	17	0.039	694	59	0.085	264	18	0.068	281	23	0.082	429	36	0.084	43	0	0.000	5	1	0.200	85	9	0.106	2236	163	0.073

[1] NOUT = Northern Outside
COUT = Central Outside
SOUT = Southern Outside
SIN = Southern Inside
SNTR = Southern Intermediate
CIN = Central Inside
STEP = Stephens Passage
CNTR = Central Intermediate
LYNN = Lynn Canal

Table 13. Number of adipose clipped chinook salmon sampled (Clip), difference between the number of heads arriving at the lab and the number of adipose clips sampled (Lost), and the ratio of this difference to the number of adipose clipped chinook counted (Frac) from the 1982 (calendar year) troll fisheries in Southeastern Alaska by statistical week and quadrant.

	Troll Quadrant														
	NOUT			SOUT			NIN			SIN			TOTAL		
Stat Week	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac	Clip	Lost	Frac
1 -16	34	0	0.000	14	0	0.000	14	0	0.000	10	0	0.000	72	0	0.000
20-22	163	0	0.000	69	1	0.014	16	0	0.000	23	1	0.043	271	2	0.007
23	163	9	0.055	48	1	0.021	61	1	0.016	23	3	0.130	295	14	0.047
24-25	284	16	0.056	54	6	0.111	69	3	0.043	40	4	0.100	447	29	0.065
25-26	192	13	0.068	25	2	0.080	55	0	0.000	72	5	0.069	344	20	0.058
27	150	14	0.093	20	1	0.050	42	1	0.024	45	1	0.022	257	17	0.066
28	73	4	0.055	6	1	0.167	51	3	0.059	34	4	0.118	164	12	0.073
29	113	12	0.106	9	1	0.111	40	2	0.050	25	3	0.120	187	18	0.096
30	98	14	0.143	7	2	0.286	60	20	0.333	41	2	0.049	206	38	0.184
31-32	106	10	0.094	12	3	0.250	48	11	0.229	51	3	0.059	217	27	0.124
Total	1376	92	0.067	264	18	0.068	456	41	0.090	364	26	0.071	2460	177	0.072

Table 14. Estimated number of tagged wild stock chinook salmon caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata.

Region	Release Site	Tag Code	Brood Year	Number Tagged	Gillnet		Purse Seine		Troll		Total	
					No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Alaska	Nahlin R.	041708	1976	5092							+	
	Stikine R.	041635	1975	2086					3	2.1	3	2.1
		041633	1976	507					2	1.9	2	1.9
		041717	1976	420					1	0.1	1	0.1
	Taku R.	041710	1976	4358					2	1.8	2	1.8
		041713	1976	6134					2	1.9	2	1.9
		041721	1976	4778					2	1.1	2	1.1
		041722	1976	3717	3	1.6			4	3.7	7	4.0
		041723	1976	666					2	1.5	2	1.5
		041662	1977	2549					2	1.9	2	1.9
		041730	1977	7740					3	2.1	3	2.1
		041655	1979	10014							+	
		041920	1979	3397			3	2.1			3	2.1
British Columbia	Atnarko R.	022016	1976	49207					8	5.3	8	5.3
		022022	1977	57654					18	6.5	18	6.5
	Birkenhead R.	021711	1979	15018	2	1.6					2	1.6
	Chilko R.	021602	1978	45932					3	2.1	3	2.1
		021658	1978	149523					2	1.6	2	1.6
	Kitsumkalum R.	020126	1976	25853					9	3.3	9	3.3
		022055	1976	1500					2	1.6	2	1.6
		022052	1977	58200					4	1.9	4	1.9
		021852	1979	48091							+	
	Nitinat Lk.	021654	1977	13683					22	5.0	22	5.0
		081926	1978	12594					35	6.7	35	6.7
		081927	1979	17685					3	2.8	3	2.8
	Shuswap R.	021625	1978	123456			7	4.0	87	11.8	94	12.5
		021638	1978	18719					10	4.2	10	4.2
	Kitimat R.	022050	1976	1578							+	
		021844	1980	25676							+	

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Table 14. Estimated number of tagged wild stock chinook salmon caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata (continued).

Region	Release Site	Tag Code	Brood Year	Number Tagged	Gillnet		Purse Seine		Troll		Total	
					No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Washington	Bonneville Tailrace	031733	1980	42924			5	4.1			5	4.1
	Columbia R. Astoria	034002	1979	47600	2	1.0					2	1.0
	Col R Below Bnville	77	1977	23350					41	7.5	41	7.5
		787577	1977	16917			1	0.4	12	5.7	13	5.7
		847782	1977	6155					9	2.7	9	2.7
		768677	1978	41195					127	15.7	127	15.7
		848276	1978	43482			14	7.8	55	11.1	69	13.6
		848278	1978	25620					59	14.5	59	14.5
		847686	1978	18533					31	7.8	31	7.8
	Col. R. Dalton Pt.	HO	1979	40737			14	8.3	9	3.5	23	9.0
		LA	1979	39476					2	1.4	2	1.4
		NDSM	1979	33641			8	6.5	2	1.4	10	6.6
	Col R Above McNary	867276	1978	19810					2	1.9	2	1.9
	Col. R. McNary	837572	1977	15092					3	2.1	3	2.1
		868175	1977	23045					2	1.2	2	1.2
		ERLA	1978	32478					2	1.1	2	1.1
		768676	1978	40398					9	4.0	9	4.0
		848682	1978	51558					13	3.6	13	3.6
		ERPR	1978	32441							+	
		CE	1979	39005					5	2.3	5	2.3
		CEDY	1979	45582			3	2.2	4	2.0	7	3.0
	McNary Tailrace	031731	1980	17723			1	0.0			1	0.0
		031734	1980	2869			1	0.0			1	0.0
	Lewis River	631618	1977	19806					6	2.5	6	2.5
		631619	1977	15887					4	2.1	4	2.1
		H10105	1978	29793					5	3.1	5	3.1
		631858	1978	26242			7	6.7	15	4.2	22	7.9
		631859	1978	23402					4	1.6	4	1.6
		631910	1978	30654					10	3.2	10	3.2
		631902	1978	21187							+	
		632002	1978	18238					2	1.0	2	1.0
		H10104	1978	31055							+	
		632207	1979	26181			3	2	3	2.8	6	3.4
	Quinault Lk.	053101	1979	17166			8	6.7			8	6.7

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Table 14. Estimated number of tagged wild stock chinook salmon caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata (continued).

Region	Release Site	Tag Code	Brood Year	Number Tagged	Gillnet		Purse Seine		Troll		Total	
					No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Oregon	Deschutes R.	071835	1978	13479							+	
		071836	1978	4832					2	1.6	2	1.6
		072146	1979	11788			3	2.0			3	2.0
		072147	1979	5211					6	3.3	6	3.3
	Granite Cr.	071940	1978	8029					2	1.6	2	1.6
	N. Santiam R.	072254	1979	48313			1	0.4			1	0.4

Table 15. Estimated number of chinook salmon of Alaska hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata.

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Crystal Lk	Blind Slough (106-44)	041616	1976					71	17	71	17
	Crystal Cr. (106-44)	041835	1977	8	7			14	4	22	8
		041836	1977					25	5	25	5
		041837	1977					14	5	14	5
		042042	1979							+	
		042043	1979	16	9	17	7			33	11
Subtotal				24	11	17	7	124	19	165	23
Deer Mountain	Ketchikan Cr. (101-47)	041746	1977					18	7	18	7
		041747	1977			3	2	24	5	27	5
		041932	1978	3	3			74	10	77	10
		041938	1978			2	0	136	14	138	14
		041939	1978	2	2	3	2	146	14	151	14
		041940	1978	12	7	3	2	131	13	146	15
		041917	1979			1	0			1	0
		041943	1979							+	
		041945	1979			3	2			3	2
		042003	1979							+	
		042039	1979					3	2	3	2
		042040	1979							+	
Subtotal				17	8	15	4	532	26	564	27

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Table 15. Estimated number of chinook salmon of Alaska hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unkown sampling strata (continued).

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Little Port Walter	L. Port Walter	031605	1976					2	1	2	1
		031611	1976					3	2	3	2
		031613	1976			3	2	15	5	18	5
		031614	1976	8	6			8	2	16	6
		031615	1976					4	2	4	2
		031616	1976					2	1	2	1
		031617	1976					6	4	6	4
		031609	1977					2	1	2	1
		031621	1977					2	2	2	2
		031622	1977					2	2	2	2
		031623	1977					6	3	6	3
		031631	1977					14	5	14	5
		031632	1977					24	6	24	6
		031634	1977					8	3	8	3
		031635	1977					10	4	10	4
		031636	1977					7	3	7	3
		031638	1978					2	2	2	2
		031658	1978					4	2	4	2
		031703	1978	2	2	3	2	19	4	24	5
		031704	1978			3	2	33	6	36	6
		031705	1978					2	1	2	1
		031706	1978			7	1	48	7	55	7
		031707	1978	4	3			6	3	10	4
		031708	1978					2	1	2	1
		031709	1978					20	5	20	5
		031710	1978					19	5	19	5
		031711	1978	1	0	1	1	10	3	12	3
		031712	1978					4	2	4	2
		031713	1978					6	2	6	2
		031715	1978					4	2	4	2
		031716	1979	2	2	64	11	2	1	68	11
		031717	1979			31	9			31	9
Subtotal				17	7	112	14	296	19	425	25
Snettisham	Speel Arm (111-33)	041930	1977					2	1	2	1
		042049	1979			7	4			7	4
Subtotal						7	4	2	1	9	4
Alaska Total				58	14	151	16	954	38	1163	43

Of the estimated 1,163 chinook salmon contributed by Alaskan hatcheries, Deer Mountain contributed 564 (49%) fish, Little Port Walter contributed 425 (37%) fish, and Snettisham and Crystal Lake contributed the remaining 174 (15%) chinook salmon. The troll fishery harvested the largest number of Alaska hatchery chinook salmon (954 fish, or 82%) followed by the purse seine fishery (151 fish, or 13%), and the gillnet fishery (58 fish, or 5%). The contribution to the net fisheries were comparable to the proportion of fish harvested by these gear types since 10% and 6% of the total chinook salmon harvested was taken by purse seine and gillnet gear, respectively. Less than 1% of the total commercial catch of chinook salmon are estimated to be of Alaska hatchery origin.

An estimated 37,145 chinook salmon from British Columbia hatchery tag groups, or 13% of the total commercial catch, were harvested in Southeastern Alaska fisheries (Table 16). Robertson Creek hatchery contributed the largest number of fish (33,022 fish, or 89% of the total estimated British Columbia contribution) followed by Quinsam River hatchery (2,539 fish, or 7%) and Big Qualicum River hatchery (621 fish, or 2%). The Alaska troll fishery harvested an estimated 32,454 (87%), purse seine fishery took 4,108 (11%), and gillnet gear took 583 (2%) British Columbia hatchery chinook salmon.

Washington tagged hatchery releases contributed an estimated 3,923 chinook salmon to the Southeastern Alaska commercial catches (Table 17). Priest Rapids hatchery on the Columbia River contributed an estimated 1,194 (30% of total Washington tagged releases) chinook salmon to the Southeastern Alaska harvest, followed by Washougal hatchery (449 fish, or 11%), and Quinault Lake (397 fish, or 10%). A total of 66 different tag codes from 27 rearing facilities was recovered in 1982. An estimated 87% (3,394 fish) of the Washington tagged chinook salmon were caught by the troll fishery, 6% (236 fish) by the purse seine fishery, and 7% (293 fish) by the gillnet fishery.

Oregon tagged hatchery releases contributed an estimated 5,207 chinook salmon to the Southeastern Alaska harvest (Table 18). A total of 112 tag codes from 17 rearing facilities was recovered. Most of the Oregon hatchery fish were removed by the troll fishery (4,152 fish, or 80%), with catches by purse seine gear being 876 fish (17%), and gillnet gear being 179 fish (3%). Bonneville hatchery contributed the largest number of chinook salmon (2,163 fish, or 50% of total Oregon tagged releases), followed by Oakridge hatchery (1,604 fish, or 31%).

A total of 70 fish was estimated to originate from Idaho, 4 tag codes and 1 hatchery were represented (Table 19).

The total coded wire tagged hatchery contribution to Southeastern Alaska's 1982 commercial fisheries was estimated to be 47,508 chinook salmon, with an associated standard error of 2,051 fish. Because the beginning winter fishery of 1983 (statistical weeks 40-53) was not sampled (a total of 12,518 out of 249,882 chinook salmon, or 5.0% of the total troll catch), this total estimate is probably an underestimate of the actual number of hatchery fish present in the commercial catch. Also, contribution estimates were not made for strata when no samples were obtained. Except for the troll winter catch which occurred between 1 October and 31 December 1981, contributions for strata

Table 16. Estimated number chinook salmon of British Columbia hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata.

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Atnarko	Atnarko R.	022020	1977					2	2	2	2
		022021	1977							+	
		021732	1978					43	10	43	10
Subtotal								45	10	45	10
Babine	Babine R.	022000	1978					12	5	12	5
		021856	1979			3	2			3	2
Subtotal						3	2	12	5	15	5
Big Qualicum	Big Qualicum R.	021726	1977					51	50	51	50
		021727	1977					24	24	24	24
		021612	1978					42	31	42	31
		021613	1978					93	46	93	46
		021656	1978			19	18	98	56	117	59
		021728	1978			6	5	23	14	29	15
		021824	1979			2	2	7	4	9	4
		021825	1979			3	2	8	7	11	7
		021826	1979					20	19	20	19
		021834	1979			117	85	108	54	225	101
Subtotal						147	87	474	113	621	143
Little Qualicum	L. Qualicum R.	022244	1980							+	
Birkenhead	Birkenhead R.	021761	1978					5	3	5	3
Capilano	Capilano R.	021729	1978					5	4	5	4
		021730	1978	9	9					9	9
		021830	1979			8	8	13	12	21	14
		021831	1979	18	12			8	7	26	14
		021832	1979					13	8	13	8
		021838	1979					7	6	7	6
		021735	1980			1	0			1	0
		021940	1980							+	
		021955	1980			3	3			3	3
		022150	1980							+	
		022151	1980			9	8			9	8
		022152	1980			43	25			43	25
Subtotal				27	15	64	28	46	18	137	36
Chemainus	Chemainus R.	021801	1979	4	3	1	0	8	3	13	4
		022004	1979	2	1			6	2	8	2
Subtotal				6	3	1	0	14	4	21	5

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Table 16. Estimated number chinook salmon of British Columbia hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata (continued).

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Conuma	Conuma R.	021837	1979			6	6	149	31	155	32
Cowichan	L. Cowichan R.	021846	1979			1	0	2	2	3	2
	Cowichan R.	022158	1980			2	1			2	1
Subtotal						3	1	2	2	5	2
Fulton	Babine R.	021632	1976					4	3	4	3
		022129	1976			6	6			6	6
		022219	1977					10	4	10	4
Subtotal						6	6	14	5	20	8
Kitimat	Kitimat R.	022034	1977					2	2	2	2
		022048	1977					4	2	4	2
		021614	1978					247	35	247	35
		022001	1979	2	1	5	4	20	4	27	6
		021756	1980			2	1			2	1
Subtotal				2	1	7	4	273	35	282	36
Nitinat	L. Nitinat R.	021841	1980							+	
Nanaimo	Nanaimo R.	021600	1980			7	5			7	5
Puntledge	Puntledge R.	020309	1975					7	6	7	6
		021719	1977					20	11	20	11
		021739	1977					2	2	2	2
		021731	1978					16	16	16	16
		021752	1978					12	6	12	6
		021753	1978			19	12	91	21	110	24
		021828	1979					3	2	3	2
		021854	1979	13	13			21	20	34	24
		021947	1980			7	7			7	7
		021948	1980			20	13			20	13
Subtotal				13	13	46	19	172	36	231	43

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Table 16. Estimated number chinook salmon of British Columbia hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata (continued).

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Quinsam	Quinsam R.	021916	1976					33	16	33	16
		021736	1977					66	24	66	24
		021737	1977					74	30	74	30
		021738	1977	14	13	13	12	96	28	123	33
		021759	1978	35	24	132	63	1266	204	1433	215
		021757	1979	326	149	22	15	50	28	398	152
		021758	1979	157	71	34	31	18	17	209	79
		021657	1980			87	40			87	40
		021943	1980			93	42			93	42
		021950	1980			23	12			23	12
Subtotal				532	166	404	94	1603	213	2539	286
Robertson Cr.	Robertson Cr.	021631	1976					16	15	16	15
		022217	1977					771	401	771	401
		022218	1977					1329	395	1329	395
		021606	1978			14	8	85	15	99	17
		021615	1978			927	536	9183	1084	10110	1209
		021635	1978			1009	456	16125	1159	17134	1245
		021751	1978			6	55	69	10	75	56
		022003	1978					64	9	64	9
		021715	1979					7	3	7	3
		021805	1979			27	18	9	4	36	18
		021806	1979			17	11	9	3	26	11
		021807	1979			6	5	2	1	8	5
		021827	1979			623	378	1770	424	2393	568
		021829	1979	3	2	83	26	180	32	266	41
		021661	1980			673	382			673	382
		021908	1980			9	6			9	6
		021937	1980			6	6			6	6
Subtotal				3	2	3400	884	29619	1730	33022	1943
San Juan	San Juan R.	021849	1979			7	7	10	4	17	8
Squamish R.	Squamish R.	021734	1978					16	4	16	4
Tlupana	Conuma	021840	1980			5	4			5	4
Westholme	Chemainus R.	021942	1980			2	1			2	1
British Columbia Total				583	167	4108	892	32454	1746	37145	1967

Table 17. Estimated number chinook salmon of Washington hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata.

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Armstrong Cr.	Stillaguamish R.	050843	1980			1	1			1	1
Big Creek	Col. R. Astoria	034002	1979	2	2					2	2
Cowlitz	Cowlitz R.	631803	1977							+	
		631817	1977					13	10	13	10
		631942	1978					233	180	233	180
		631951	1978					53	53	53	53
		632154	1979							+	
Subtotal								299	188	299	188
Elwha	Elwha R.	631919	1978					242	110	242	110
Gray's River	W. Fk. Grays R.	631646	1978					20	20	20	20
		631937	1978					36	25	36	25
		631939	1978					14	9	14	9
		632043	1979	87	85					87	85
Subtotal				87	85			70	33	157	91
Green River	Big Soos Cr.	631945	1978					82	58	82	58
Issaquah	Issaqauah Cr.	631940	1978					32	32	32	32
		631943	1979			29	28			29	28
Subtotal						29	28	32	32	61	43
Kalama Falls	Kalama R.	631746	1977					37	26	37	26
		631747	1977					4	2	4	2
		631957	1978					167	96	167	96
Subtotal								208	99	208	99
Klickitat	Klickitat R.	631663	1977					2	2	2	2
		631750	1977					32	7	32	7
		631949	1978					29	28	29	28
Subtotal								63	29	63	29

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Table 17. Estimated number chinook salmon of Washington hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata(continued).

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Lewis R.	Lewis R.	131614	1976					3	3	3	3
		631611	1977					5	3	5	3
		631748	1977					4	2	4	2
		631813	1978			3	2	4	2	7	3
		632042	1979							+	
		632208	1979							+	
Subtotal						3	2	16	5	19	5
Lower Kalama	Fallert Cr.	632006	1979					37	36	37	36
		632254	1980			49	48			49	48
Subtotal						49	48	37	36	86	60
Priest Rapids	Columbia R.	631662	1976					34	19	34	19
		631741	1977					46	20	46	20
		632017	1978					29	14	29	14
		631821	1978					763	162	763	162
		631857	1978					9	9	9	9
		631948	1979			107	74	186	96	293	121
		632155	1979			20	20			20	20
Subtotal						127	77	1067	191	1194	206
Puyallup	Voights Cr.	631814	1978					29	29	29	29
Ringold	Columbia R.	631733	1977					11	10	11	10
		631745	1977			4	3	78	23	82	23
Subtotal						4	3	89	25	93	25
Quinault Lk	Cook R.	050337	1977					15	5	15	5
	Cook R.	050338	1978					55	20	55	20
	Salmon R.	050518	1978			1	1	57	9	58	9
		050519	1978			8	7	50	10	58	12
		050520	1978			4	4	9	4	13	6
		050521	1978					16	15	16	15
		050523	1978					84	28	84	28
		050525	1978					87	28	87	28
		050534	1979					8	8	8	8
		050833	1980			3	2			3	2
Subtotal						16	8	381	50	397	50

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Table 17. Estimated number chinook salmon of Washington hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata (continued).

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Samish	Samish R.	632042	1979			3	2	3	1	6	2
		632101	1979	2	2					2	2
		632102	1979	2	2	3	2	3	2	8	3
Subtotal				4	3	6	3	6	2	16	5
Sea Resources	Chinook R.	632061	1979					92	91	92	91
Skookum Cr.	Lummilumni Bay	050831	1980			1	0			1	0
Speelyai	Lewis R.	631920	1978					7	3	7	3
		631950	1978					17	8	17	8
Subtotal								24	9	24	9
Soleduck	Taft Cr.	631757	1977					22	7	22	7
Toutle	Green R.	631763	1977					279	143	279	143
		631801	1977					19	9	19	9
		631941	1977					67	47	67	47
Subtotal								365	151	365	151
U.W. Coll. Fish.	Portage Bay	111627	1979	4	4					4	4
Washougal	Washougal R.	631803	1977	3	3			8	3	11	4
		631946	1978					106	60	106	60
		632153	1979	193	191			139	79	332	207
		632251	1980					+			
Subtotal				196	191			253	99	449	215
Wells	Columbia R.	631762	1977					5	5	5	5
Willard	Columbia R.	8482	1976					7	3	7	3
Winthrop	Methow R.	631811	1977					3	3	3	3
		631820	1977					2	1	2	1
Subtotal								5	3	5	3
Washington Total				293	209	236	95	3394	382	3923	446

Table 18. Estimated number chinook salmon of Oregon hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata.

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Anadromous Inc.	Coos Bay	620155	1977					33	32	33	32
		625002	1978					2	1	2	1
		624003	1979	13	10	6	3	9	9	28	14
		622704	1980			6	6			6	6
Subtotal				13	10	12	7	44	33	69	35
Bonneville	Tanner Cr.	071658	1977					473	146	473	146
		071660	1977			1	1	8	3	9	3
		071661	1977					41	8	41	8
		071733	1978			7	6	26	18	33	19
		071734	1978	26	25	220	103			246	106
		071735	1978			442	252	1323	305	1765	396
		072207	1979					15	6	15	6
		072141	1980			17	11			17	11
		072142	1980			2	0			2	0
		072143	1980			4	2			4	2
		072506	1980							+	
		072507	1980			8	4			8	4
Subtotal				26	25	701	273	1886	338	2613	435
Cedar Creek	Nestucca R.	071641	1977					21	10	21	10
		071642	1977					23	9	23	9
		071851	1978					58	25	58	25
		071852	1978					16	9	16	9
		072360	1980							+	
Subtotal								118	30	118	30
Dexter Ponds	Willamette R.	071737	1977					35	34	35	34
		071741	1977					105	62	105	62
Subtotal								140	71	140	71
Domsea Farms	Siuslaw Bay	071858	1978					3	2	3	2
		624824	1978					23	9	23	9
		624825	1978					4	2	4	2
		072241	1979					8	5	8	5
		624826	1979			3	3	8	7	11	8
		624832	1980							+	
Subtotal						3	3	46	13	49	13

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Table 18. Estimated number chinook salmon of Oregon hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata (continued).

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Eagle Creek NFH	Eagle Cr.	071747	1977					2	2	2	2
Elk River	Elk R.	072008	1978					6	3	6	3
		072242	1979			3	2	6	5	9	5
		072243	1979			3	2	2	1	5	2
		072244	1979					3	3	3	3
		072245	1979			1	0			1	0
		072536	1980			7	4			7	4
Subtotal						14	5	17	7	31	8
Fall Creek	Fall Cr.	071855	1978					21	7	21	7
		072233	1979			3	2	2	2	5	3
Subtotal						3	2	23	7	26	8
Marion Forks	N. Santiam R.	071729	1977					3	3	3	3
		071731	1977							+	
		071732	1977					6	6	6	6
		072252	1979			2	1			2	1
		072253	1979	5	3	1	0	2	1	8	3
		072254	1979	7	7	1	1			8	7
Subtotal				12	8	4	1	11	7	27	10
McKenzie	McKenzie R.	072048	1978					5	3	5	3
		072049	1978					17	4	17	4
		072050	1978					18	5	18	5
		072051	1978							+	
		072052	1978					5	2	5	2
		072053	1978					12	7	12	7
		072217	1979			3	2			3	2
		072218	1979							+	
		072219	1979			11	7			11	7
		072220	1979			5	2			5	2
		072221	1979			3	2			3	2
		072222	1979			1	0			1	0
		072054	1980							+	
		072516	1980			12	8			12	8
		072517	1980			3	2			3	2
Subtotal						38	11	57	10	95	15

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Table 18. Estimated number chinook salmon of Oregon hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata (continued).

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Oakridge	Willamette R.	071739	1977					2	2	2	2
		071925	1978					214	96	214	96
		072040	1978					30	6	30	6
		072041	1978					5	2	5	2
		072042	1978					1028	212	1028	212
		072043	1978					7	3	7	3
		072044	1978					67	11	67	11
		072045	1978					3	2	3	2
		072046	1978					41	7	41	7
		072047	1978					9	3	9	3
		072224	1979			3	3			3	3
		072226	1979	120	119	14	13	21	20	155	121
		072302	1979			13	12			13	12
		072303	1979	6	5	3	2	2	2	11	6
		072305	1979			6	3	2	2	8	4
		072307	1979			5	2			5	2
		072419	1979			3	2			3	2
		072237	1980							+	
		072418	1980							+	
Subtotal				126	119	47	18	1431	234	1604	263
Oregon Aqua-foods	Yaquina R.	071628	1977					5	3	5	3
		071857	1978					3	2	3	2
		603111	1978					9	4	9	4
		603113	1978			4	3	23	5	27	6
		603117	1978					130	130	130	130
		603130	1978			3	2	5	3	8	4
		603502	1980			8	8			8	8
		603503	1980							+	
		603504	1980			7	4			7	4
	Tioga Cr.	071863	1980							+	
Subtotal						22	9	175	128	197	128
Rock Creek	N Limpqua R.	072501	1980			4	2			4	2
Salmon River	Salmon R.	091637	1976					2	1	2	1
		071643	1977					5	3	5	3
		071644	1977					15	5	15	5
		071849	1978					3	3	3	3
		071850	1978			7	7	52	12	59	14
		072239	1979			11	8	6	5	17	9
		072504	1980							+	
Subtotal						18	11	83	15	101	18

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Table 18. Estimated number chinook salmon of Oregon hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata (continued).

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
South Santiam	Willamette R. Fs	071923	1977					6	6	6	6
		071924	1977					3	3	3	3
		071927	1977					2	1	2	1
		071945	1978			3	2	13	4	16	4
		071946	1978					2	1	2	1
		071947	1978					11	4	11	4
		071948	1978					24	6	24	6
		072018	1978					1	1	1	1
		072020	1978					5	2	5	2
		072021	1978					6	4	6	4
		072022	1978					4	2	4	2
Subtotal						3	2	77	12	80	12
Trask	Trask R.	071856	1978					31	17	31	17
		072121	1979	2	1	1	0			3	1
		072503	1980			3	2			3	2
Subtotal				2	1	4	2	31	17	37	17
Willamette	S. Santiam R. Fer	071943	1978			3	2	9	3	12	4
	Willamette R. Fs	071944	1978					2	1	2	1
Subtotal						3	2	11	3	14	4
Oregon Total				179	122	876	274	4152	358	5207	467

Table 19. Estimated number chinook salmon of Idaho hatchery or experimental production caught in the 1982 (calendar year) Southeastern Alaska commercial fisheries (No.) and the associated standard error (S.E.). + indicates that one or more tags were recovered in unknown sampling strata.

Hatchery	Release Site	Tag Code	Brood Year	Gillnet		Purse Seine		Troll		Total	
				No.	S.E.	No.	S.E.	No.	S.E.	No.	S.E.
Hagerman NFH	Snake R.	050421	1978					2	2	2	2
	Below Bonneville	050420	1978					61	14	61	14
		102210	1980			7	4			7	4
		102211	1980							+	
Idaho Total						7	4	63	14	70	15

with no samples were generally small relative to sampled strata. It should also be noted that not all hatchery releases contained code wire tagged fish. Therefore, there was an unknown number of untagged releases of hatchery fish in the commercial catches. Comparisons between hatcheries could also be misleading because of release groups not represented by a tag code. Furthermore, non-adherence to procedures established by the PMFC for reporting releases of untagged fish adds an unknown bias to the contribution estimates. Hatchery or experimental release contribution of chinook salmon to the commercial fisheries by geographical area should be interpreted with consideration of these facts.

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